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CASE STUDIES IN PROTECTING PARKS

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NATIONAL PARK SERVICE

NATURAL RESOURCES REPORT SERIES

The Natural Resources Report Series communicates information and expertise to park resource managers that will assist them in managing, preserving, and protecting the natural resources of the parks.

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IN REPLY REFER TO:

Dear Friends:

Growth and land development beyond park boundaries are threatening park resources and the quality of experience we can provide for visitors. Some people who live and work near our parks feel threatened by proposals to expand park boundaries and our authority to control adjacent land uses. Park managers face a formidable challenge: to protect resources and maintain the goodwill of neighboring landowners and local officials.

We often hear about the resources that have been damaged or lost because of development adjacent to a park. Unfortunately, we do not so often hear about the successes of park managers in reducing or avoiding threats to park resources. Recent experience has shown that many threats to parks can be resolved by cooperation rather than confrontation, using authorities available now to protect resources for the enjoyment of future generations.

The 16 cases discussed in this report reflect commendable achievements by park superintendents and their staffs. The successes reflect substantial investments of time, energy, expertise, and patience in working with landowners, local officials, planners, and regulatory agencies. Similar efforts in other parks may not solve all of the problems associated with adjacent land development, but they can turn threats into opportunities for uses that are compatible with park values. I trust that the superintendents in these 16 areas will keep up the good work, and that others will benefit from their experiences.

William Penn Mott, Jr.
Director

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Natural Resources Report 87-2

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CASE STUDIES IN PROTECTING PARKS

Accomplishments in Protecting Parks from Adjacent Land and Resource Development Impacts

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Division of Planning and Special Studies

Donna O'Leary, Editor

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INTRODUCTION

The State of the Parks 1980 report identified land and resource development as the most common threat to units of the National Park System. Subdivisions and residential, commercial, or industrial development can have negative impacts on scenic qualities of land within or adjacent to parks. Development also can directly harm the natural, cultural, or recreational resources that a park was established to protect. Other types of land use such as logging, mineral exploration or development, power plants, and even grazing or farming may threaten park values.

Efforts to address these threats to park resources are proceeding on several fronts. Within the National Park Service (NPS), plans for land protection and natural and cultural resource management have been prepared. The Interior Department is implementing procedures to improve coordination among federal land managers and to resolve conflicts when they arise. Congress has been considering legislation to give the Park Service greater authority to influence or control major federal actions that may affect park resources.

On a national scale, many of these park protection initiatives will require time and money to collect and analyze data, to adopt formal agreements, to acquire interests in land, and to restore damaged resources. In some cases, we cannot afford to wait. As a result, many park managers using the energy, time, and authorities available now have taken noteworthy steps on their own initiative to protect the resources under their jurisdiction.

This report shares experiences of park managers who found solutions to park protection problems during the past few years. Some people feel that park protection means simply stopping development. On the other hand, the cases discussed in this report focus on efforts to modify the size, shape, character, or location of new land uses to minimize damage to park resources.

The report is based on telephone interviews with superintendents and members of their staffs in 16 parks that were selected primarily because of the type of development pressures in the surrounding areas. This sample was designed to include areas with natural, scenic, historic, and recreational resources. The issues include commercial and residential development, oil and gas operations, power plants and dams, historic preservation, air and water quality, trails and public access, and other impacts from adjacent land uses. The cases are grouped by issue, but these categories often overlap and several parks are confronting many different issues at the same time.

PROTECTION STRATEGIES

The success of efforts to protect park resources depends largely on the ability of the park manager to

- establish clear objectives
- anticipate potential impacts on park values
- build support for park interests
- understand planning and regulatory processes
- make some compromises consistent with park purposes
- communicate effectively and maintain credibility

Superintendents who have been successful in efforts to protect their parks identify the following 12 key points:

1. Get involved early.

Find out how the planning process for the area works and participate from the beginning if possible. Read comprehensive plans, zoning ordinances, transportation plans and find out the schedule for new local plans, amendments, or private sector projects. It is much easier to have some influence on the size or shape of a project before the plans are final and construction gets underway.

2. Coordinate with other federal agencies.

Other federal agency programs that regulate, finance, or provide technical assistance can influence development around the park. The Environmental Protection Agency (EPA) decisions about toxic waste, air quality, sewage treatment systems, or drinking water are only the more obvious examples. Do not forget the Corps of Engineers, Coast Guard, Federal Aviation Administration, Soil Conservation Service, and other regulators. Coordinate with neighboring land managers, including the Bureau of Land Management, Fish and Wildlife Service, and Forest Service.

3. Find support from local groups or agencies.

Support for park protection may come from citizen groups or other agencies at the county or state level. In addition to state and local parks and recreation departments, consider agencies responsible for health and environmental protection, highways and traffic, soil conservation and farming, planning, and tourism or economic development. Encourage support from groups as close to the park as possible, because some local decision-makers may resent pressure from "outsiders."

4. Inform people about the local benefits of the park.

Some officials may consider the park a federal rather than a local concern. Data on visitors from other states and their contributions to the local economy may help to enlist support. Also let people know about how the park contributes to local employment, road maintenance, emergency services, and other functions.

5. Share information freely.

While asking others to let the Park Service be involved in their planning processes, be sure to invite them to comment on NPS plans. When others understand how the park works, they may be more sympathetic to NPS interests.

6. Have facts to support your position.

Find out what information is available, what information needs to be analyzed, and what new information needs to be collected. Arguments based on data about individual and cumulative impacts on park resources are more persuasive than appeals to general principles of conservation. If development that affects the park will also affect the health of local residents or their jobs, these arguments will be more useful in getting help from local authorities.

7. Suggest alternatives and be positive rather than negative.

Instead of being against a proposed development, try to be in favor of recreation, wildlife habitat, ranching and farming, or low density housing rather than commercial or industrial use. Suggest different locations, designs, sizes, building materials, and colors to reduce adverse impacts from proposed developments.

8. Ask for what you believe is necessary.

Do not hesitate to ask landowners to modify their plans even when the Park Service has little or no authority to require the desired changes. Many landowners have cooperated to protect park resources when we have offered reasonable options for proposed developments.

9. Be prepared to negotiate.

Negotiations about new private development in a park are limited by legal mandates and requirements. However, adjacent land use issues provide more opportunities for productive negotiations. For example, keeping land next to the boundary in open space may be ideal, but not really essential if new development is carefully designed. Distinguish between what is necessary to protect park resources and what is just desirable.

10. Try to understand the interests of others.

Recognize that different points of view may be valid. While being concerned about impacts on parks, recognize that parks have impacts on landowners, farmers and ranchers, local employment, the tax base, and demands for local services. Let neighbors know that we respect their concerns even if we may not agree with them.

11. Keep in touch with the players.

Maintaining a good working relationship with the appropriate federal, state, and local officials and staff members requires frequent contact. Important information about upcoming issues can be discovered in a friendly phone call.

12. Be persistent and patient.

Some of the success stories are the result of the untiring efforts of park managers to pursue their protection objectives against heavy odds. The time and energy invested in endless meetings may not produce immediate results but builds credibility, and this effort may lead to a key decision that will protect the park in the future.

Biscayne Bay.

Biscayne National Park in Florida includes wetlands and a slender chain of islands, but more than 96 percent of the park is underwater in Biscayne Bay south of Miami. Residential, commercial, and industrial development around the park has the potential to damage fragile resources on the shore and in the water. The superintendent is consistently involved in the day-to-day decision processes of agencies responsible for regulating development that might affect park resources. Recent cases include plans for a major office building, agreements with the county and Corps of Engineers on permit review procedures, and state initiatives to protect habitat for endangered species near the park.

A major corporation proposed to build its world headquarters on a parcel of land near the north boundary of the park. The county and the developer invited the superintendent to review and comment on the plans for this building. The major issues were potential impacts on wetlands and water quality and scenic values in the park.

By cooperating with the local agencies responsible for granting permits, the superintendent successfully encouraged the developer to make several adjustments in the plans. A portion of the property that extended into the boundary was donated to the park, and some adjacent lands were designated for better management of storm-water runoff. The park asked that the height of the building be limited to tree level but was not successful in this request. As a compromise, however, an agreement was reached on several measures to reduce scenic impacts. These measures included a facade with nonreflective glass, planters filled with vegetation on balconies, and additional setbacks on each floor instead of a typical office tower. These design features will reduce the intrusion on a relatively natural shoreline that many park visitors see.

Shoreline development near Biscayne.

The park participates with several other local and federal agencies that review applications for dredge and fill permits from the Corps of Engineers. The Corps now recognizes a park protection zone that encompasses wetlands immediately adjacent to the park boundary. This

recognition came about when Dade County asked the Corps for a general permit to authorize dredge and fill operations without considering comments from other federal agencies. The Corps granted the county this permit but included a requirement that the park be notified of any applications in this sensitive area and that park comments be considered before a permit could be issued. Park comments usually recommend specific steps to mitigate impacts of development by selecting the least sensitive locations for fill or by presenting structural solutions to minimize the disruption of water flow and quality.

Key Largo, just south of the park, is another good example of success in protecting park resources from impacts of development beyond the boundary. Although much of the land on this key has been developed, the remaining natural areas provide important habitat for endangered species that frequent the park. Local residents and state agencies were concerned about the future of this important area and the governor established a committee to study the problem. The superintendent was invited to serve on the committee, and helped formulate recommendations for the state to designate an Area of Critical State Concern and to acquire all of the undeveloped lands on north Key Largo.

In each of these cases the park had a positive influence on decisions about development of adjacent lands by working with local, state, and other federal agencies. This work often involved providing expertise about natural resources to support initiatives by local agencies and groups. Working through organizations, such as the Biscayne Bay Management Committee, allows the park to achieve its objectives without taking a lead in the political arena.

Manassas National Battlefield Park is surrounded by one of the fastest growing areas in the Virginia suburbs near Washington, D.C. Local officials are generally enthusiastic about new commercial and residential development that improves the local tax base and provides employment opportunities. Subdivisions, shopping centers, and office buildings are appearing and expanding around the park boundary.

Development near Manassas park entrance.

Prince William County invited the superintendent to participate on a citizen committee that was developing a new comprehensive plan. Because the superintendent was involved early in the process, the plan designated some adjacent lands for residential uses rather than high density commercial uses. The superintendent worked closely with the county planning director to encourage zoning decisions that minimized adverse impacts on the park.

A careful reading of the local zoning code, maps, and comprehensive plans has been essential to working effectively with local technical staffs. Knowing the district engineer for the Virginia State Highway Department also proved useful in efforts to emphasize concerns about traffic generated from new development or even impacts of drainage from a new subdivision.

A holiday "open house" held by the park also proved to be a useful method of letting neighbors and local officials know more about benefits of the park to the community.

In spite of these efforts, Prince William County has not been sympathetic to concerns about the impact of new development on the park, or significant historic areas outside the boundary. For example, the owners of a 540-acre tract adjacent to the park sought a zoning change to allow 900 single-family homes and 325 multi-family units. County approval seemed likely, although the new zoning would not be consistent with the comprehensive plan. As a result, the superintendent tried direct negotiations with the developers.

The park had allies among citizen groups that were concerned about the effect of high density residential development on traffic, schools, and basic services. In many respects, protecting park values was the same as protecting the quality of life for park neighbors. In response to the concerns of the park and citizen associations, the developer agreed to limit the height of new construction to 45 feet, to revise road plans, to contribute to the cost of building a new interchange, to work with the Park Service on suitable plantings to create an effective visual screen, and to build a storm-water retention system. The number of residential homes was reduced from 1,225 units to 650 units.

The superintendent supported the revised request for rezoning based on the judgment that the new proposal included the best possible measures to minimize harm to the park. Some conservation organizations agreed with the superintendent's position, but other groups especially interested in the Civil War complained that the park "sold out" to the developers. The regional director and the Washington Office rallied to support the superintendent for working effectively in seeking to reduce impacts from development that was inevitable.

View of St. Johns River from Fort Caroline.

Fort Caroline National Memorial in Florida enjoys a dramatic view over the St. Johns River and the scene important for interpretation of the park. A developer proposed to build up to 600 residences on a 350-acre island that was part of this key scenic resource. At the same time, the Port Authority of Jacksonville had an interest in using this land to dispose of spoil from dredging the river channel.

The superintendent appeared at the first hearing on a proposal to change the zoning of the island from agricultural to residential. Although the developers had a substantial base of local support, the park also had allies in efforts to keep the island in a relatively natural condition. In addition to the local historical association and environmental groups, the Corps of Engineers wanted to block proposed residential development.

The superintendent endorsed using the island as a spoil disposal site because it would retain a relatively natural appearance. Rather than simply opposing residential use, the park supported competing uses of the land to meet needs

of improved navigation, the port, and the local economy. Continued efforts to work with local groups and congressional representatives succeeded in securing funds for the state to acquire the land. This acquisition will ensure that the island remains open and will protect the scenic qualities important to the park.

Some key ingredients in this success story were an understanding of how local agencies operated, diligent attendance at meetings, frequent contacts with local interest groups, and good relationships with elected officials.

Commercial development across from entrance to Gettysburg.

Richmond National Battlefield Park covers 768 acres in 10 separate units in the city of Richmond, Virginia, and three surrounding counties. Land is rapidly changing around many of these units from agricultural to residential, commercial, or industrial use. New developments often intrude on the rural scene which is important in explaining the battles, as well as the historic environment, to visitors. In addition, construction on adjacent land can have direct impacts on historic structures, archeological resources, earthworks, and water resources in the park.

The superintendent and park staff have been working closely with local groups and officials to address the potential impacts of new development on park resources. Many local officials are more interested in promoting growth than protecting an agricultural or historic scene for the benefit of the park. Nevertheless, the current battles at Richmond are focused on the details of site plans and setbacks rather than a crusade against inevitable changes in the landscape of the metropolitan area. In fighting these battles, the park often finds support from neighbors who share concerns about density, traffic, open space, and the general quality of the living environment.

Chickahominy Bluffs is a 39.2-acre unit of the park overlooking Mechanicsville, northeast of Richmond. This strategic vantage point was important in the beginning of the 1862 Seven Days' Battle and contains historic earthworks. An application was filed to rezone some adjacent land from agricultural to high density residential use. As soon as the superintendent learned about this application, he began working with the planning board to ensure that impacts on the park would be carefully considered.

In addition to the general historic scene, specific issues included possible heavy recreational use of the park by residents of the new development, road design and traffic safety for the park entrance, erosion from construction on unstable soils, and reasonable setbacks from the boundary.

Negotiations with the planning board and the developer produced some significant adjustments in the rezoning request. The density was reduced, and the owners agreed to construct an earthen berm to help screen new construction. A parking area was redesigned and one structure immediately adjacent to the boundary was dropped from the plans. The developers were also willing to address the park's concerns about damage to historic resources from uncontrolled recreational use by the new residents. The plans were revised to include more open space and recreational areas as part of the new development, and the owners agreed to install a fence to control direct access to the park.

Many of the park's concerns were shared by local groups that wanted to protect the character of their neighborhood from high density development. The park may have hoped for agricultural zoning to remain, but this was simply not possible in light of the pressures to develop. The park appeared as a part of the community rather than a threatening federal presence and succeeded in gaining cooperation from the local zoning authorities and the Board of Supervisors. The harmful impact of adjacent development will be reduced, and park resources will be better protected. A valuable precedent was established when the local planning board agreed that high density development next to the park should include some open space so that new residents would not have to use the battlefield as a local recreational area.

Glacier National Park in Montana shares boundaries with Canada, an Indian reservation, and a national forest. Along the North Fork of the Flathead River, the park also borders about 17,000 acres of private lands that are currently used for ranching, timber, and agriculture. This land is an important part of the habitat and migratory routes for several endangered species that frequent the park. These private lands are essentially the only ones available for development in the region.

With encouragement from the park, local landowners initiated a land use planning effort to guide the future of the North Fork. The park is a partner in an interlocal agreement that calls for resource managing agencies to work together and with the more than 400 private owners in the area. A draft plan has been prepared, with the objective of maintaining traditional economic uses but limiting new development that would damage park resources. Voluntary action by landowners, in cooperation with the park and the county, is helping to restrict small lot subdivisions, maintain wildlife corridors, and minimize harmful impacts on the environment. A local land trust has been established with authority to accept easements.

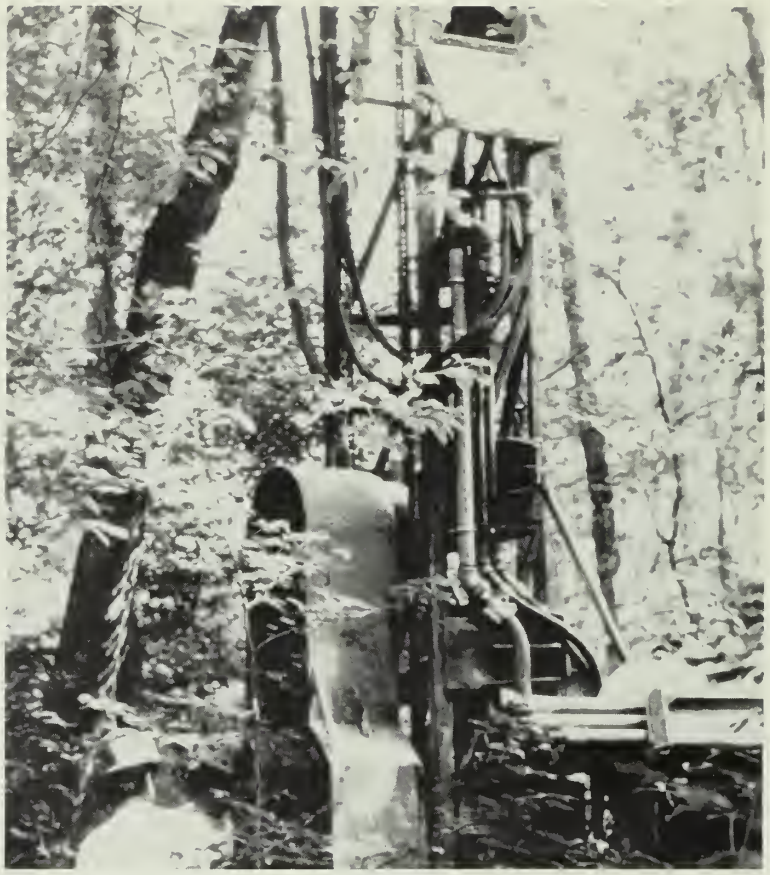
The willingness of local landowners to participate in this protection effort may have been stimulated from concerns that Congress would impose a legislative solution. Nevertheless, many local residents want to retain the existing character of the area. Meetings between the park and landowners have led to dramatically improved understandings of each other's concerns.

The Forest Service has also been involved in this effort and has become increasingly sensitive to park concerns. For example, the Forest Service is using

Glacier National Park.

its own scenic management system to assess impacts of proposed timber cuts in the forest on the view from trails and other visitor use areas within the park. The size, shape, and location of areas proposed for timber harvest have been adjusted in response to park comments.

During the past few years, the park's resource management specialist has been working as a member of the team preparing a plan for oil and gas development in the Flathead National Forest. In the case of a proposed oil well in the forest at Hall Creek, NPS comments outlined concerns about impacts on park resources. The Fish and Wildlife Service took a lead in opposing the project based on potential jeopardy to endangered grizzly bear. As a result, road locations were changed, interagency poaching controls were developed, and other concessions were made to avoid adverse impacts of the proposed development.



Seismic testing in Big Thicket.

Equipment for oil and gas operations on Padre Island.

Big Thicket National Preserve in Texas was established to protect unique natural and botanical resources and scenic and recreational values. Congress, however, limited NPS authority to acquire mineral rights and authorized using regulations to control exploration and extraction of oil, gas, and other minerals. The preserve staff works with individual oil and gas operators to allow reasonable access and development while minimizing harmful impacts on the resources and values of the preserve.

In one case, a small oil company proposed drilling in the floodplain inside the preserve boundary. NPS regulations (Code of Federal Regulations, Title 36, Part 9B) require the owners of oil and gas rights to submit plans of operations for NPS approval before starting exploration or development. After reviewing the company's proposal, the preserve staff found an alternate location that would avoid sensitive resources within the floodplain. The drill site was moved 1,000 feet to an old drilling pad beyond the boundary, where the oil could be extracted by slant drilling. Special studies were conducted to document that the slant drilling would not contaminate the aquifer.

In response to NPS requirements, oil companies changed the route of an access road to avoid habitat of an endangered species, restored sites damaged by seismic tests, and removed toxic substances left over from drilling operations. One company produced a documentary film on their cleanup efforts, providing some public relations benefits while protecting resources in the preserve. Requirements in plans of operations are expected to ensure that oil and gas development proceed in an environmentally sound manner while the purposes of Big Thicket are protected.

Padre Island National Seashore experiences a variety of impacts from drilling operations for oil and gas both onshore and offshore. Under an agreement with the state of Texas, no offshore drilling is allowed within 2 miles of the coastline. Nevertheless, offshore oil and gas operations contribute to the tar, trash, and other debris, including 55-gallon drums which may contain toxic wastes, that frequently wash up on the beach from numerous sources throughout the Gulf of Mexico.

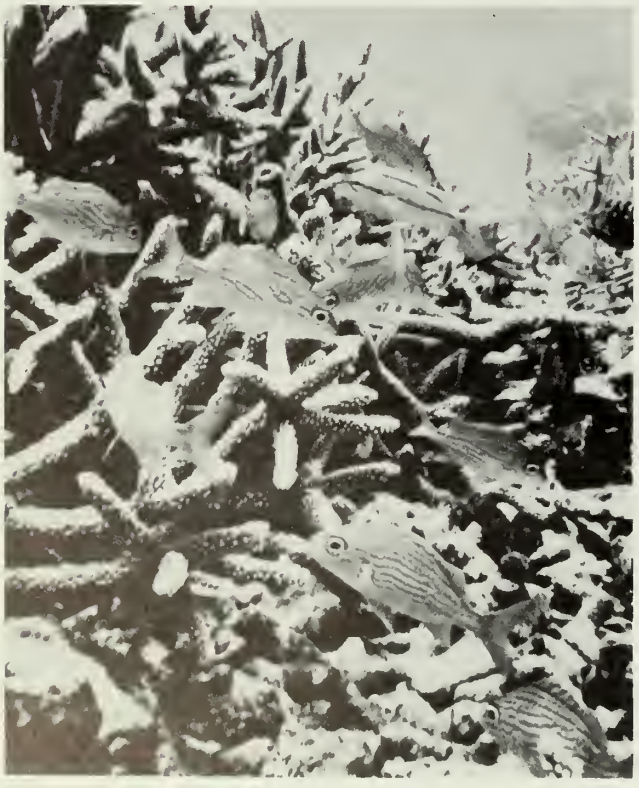
The Minerals Management Service (MMS) is responsible for the Department of the Interior (DOI) outer continental shelf oil and gas development program. The park staff worked with the NPS Southwest Regional Office and the DOI regional environmental officer to seek help from the state and the MMS regional response team in addressing impacts of offshore drilling. As a result of these efforts, the Environmental Protection Agency designated the seashore as a hazardous waste site. This designation made money from the superfund available to dispose of the drums that were suspected of containing toxic chemicals.

The Minerals Management Service also notified industry that equipment used on drilling platforms had to be marked with identifying numbers, and the Coast Guard strengthened efforts to enforce these regulations.

The Offshore Operators Council responded positively to the waste problem and the new requirements by producing an educational film for member companies, emphasizing the need to protect the seashore from damage caused by littering the waters of the Gulf. The film focused on the beauty of the beaches as a place that oil operators would be able to enjoy with their families. The Park Service presented the council with

a "Take Pride in America" award to reinforce this cooperative spirit.

Offshore drilling is only one dimension of the problems confronting the seashore as oil and gas development also proceeds on the island. Onshore plans of operations require that drilling takes place behind the dune line to minimize adverse impacts on scenic values and the risk of water pollution. In one case a site, which was leased before the area was established as a national seashore, was badly contaminated from spilled oil and possibly other toxic substances. The seashore staff requested that the site be cleaned up. Although legal requirements to remove the spilled oil and contaminated soil were not clear, the company recently completed a three-month program to restore the site.



Florida coral reef.

Fort Jefferson National Monument in Florida and four other NPS units bordering the Gulf of Mexico are vulnerable to impacts from offshore oil and gas operations. The Minerals Management Service has established a technical working group that includes representatives from the states, Defense Department, Coast Guard, National Marine Fisheries Service, Fish and Wildlife Service, and the National Park Service. NPS involvement with this group has focused on the environmental impact statements for offshore oil and gas leasing throughout the Gulf, and on maximum protection for park resources as leasing proceeds.

The original environmental impact statement prepared in 1982 for leasing in the Gulf of Mexico anticipated leasing in all available tracts. The Park Service expressed concerns about the potential for spills, from as much as 50 miles away, to damage the fragile coral reefs around Fort Jefferson. Similar concerns were expressed about shorelines at Everglades National Park, Jean Lafitte National Historical Park, Gulf Islands National Seashore, and Padre Island National Seashore.

With support from state representatives and the Fish and Wildlife Service, the Park Service suggested that some areas be deleted from consideration for leasing. The environmental impact statement was revised to include an alternative for deleting the most sensitive areas, as well as other alternatives that would establish buffer zones and still allow for a reasonable amount of leasing. Where leases have already been granted, comments from the Park Service and others have led to a major commitment of funds from the Minerals Management Service to conduct oceanographic research and modeling that will be useful in determining the impacts and risks of future decisions.

Fort Jefferson.

One of the major NPS concerns about drilling in the outer continental shelf is how quickly a spill can be responded to and contained. These concerns have been expressed consistently in many meetings with other agencies, emphasizing facts and details rather than generalities. NPS involvement also has focused on improving scientific information to guide leasing decisions. The Minerals Management Service now recognizes that the ecosystems important to Everglades National Park and other NPS areas extend a substantial distance beyond park boundaries.

Effective NPS participation in reviewing offshore leasing proposals requires the ability to critically evaluate complex technical information provided by other agencies. The oil and gas industry has generally supported improvements in the technical database because drilling in areas with less environmental sensitivity reduces the potential for controversy. The National Park Service is working with industry, regulatory agencies, and an improved database to help ensure that offshore oil and gas operators minimize damage to aquatic resources by using the best available drilling and disposal methods.

Downtown Hot Springs (left) and Bathhouse Row (right).

Historic Bathhouse Row in Hot Springs.

Hot Springs National Park in Arkansas was originally established as a federal reservation to protect uncontaminated thermal water for public use. Today, the park is recognized as a significant historic resource representing an important phase in the American conservation movement, as well as other natural and cultural values.

Bathhouse Row is the heart of the park. In recent years, seven of the eight historic bathhouses in the park's historic district were vacant. Across the street (and outside the park boundary) as many as 40 percent of the buildings in the city's central business district were empty and poorly maintained. The quality of the visitor experience in the park depends on protecting the historic character of the downtown area and restoring the bathhouses within the park.

Visits to the park by the director and a congressional delegation were instrumental in encouraging action from the city to begin a revitalization effort. For example, the city established a central business improvement district, where a special tax levy raised $500,000, which was matched by another $500,000. The city also designated a six-block historic district adjacent to the park's historic area, and the state provided grants for studies on parking, transportation, and historic resources. In addition, several private businesses began to improve their storefronts, and the National Trust for Historic Preservation has been assisting in these efforts to make Hot Springs a model revitalization project.

The park is a key partner in the efforts to protect and enhance these historic resources. The local planning commission routinely requests park comments on applications for rezonings and variances. The park staff is working with an advisory commission established by the governor to address enhancement projects for the park and city. One enhancement project includes storm-water management, an important issue in the downtown area.

To protect the springs' recharge area, developed land within the boundary is being gradually restored to a natural condition, and new development is being limited by the park's land acquisition program. Portions of the recharge area are outside the boundary. The general management plan approved in 1986 calls for the park to work with the county government to minimize impacts of new development in the recharge area by adopting a zoning and building permit program. Pressures for development in the recharge zone outside the boundary have been relatively light, but work with the county and city will be continuing in protecting natural and historic resources of the park.

Native vegetation at Saguaro.

Saguaro National Monument includes two separate units within the Tucson, Arizona, metropolitan area. Residential subdivisions have been spreading rapidly toward the monument boundaries, and natural resources are experiencing impacts from urbanization. These impacts include reduced wildlife habitat, increased traffic, expanded use as a local recreational area, deteriorated air quality, and changed drainage patterns.

In the 1970s the county comprehensive plan established a buffer zone on the sides of both monument units closest to the city. The plan recognized an area of concern extending 3 miles from the monument and recommended lower densities for development near the boundary. For example, the plan recommended densities of one unit per 4 acres within a mile of the monument. However, zoning changes and city annexations have occurred within the 3-mile area allowing more intensive development than recommended in the county plan.

In one case, the city annexed a portion of the buffer zone and approved a major development. By participating in the zoning review and approval process, the superintendent was successful in achieving substantial modifications to the original proposal. The size of the project was reduced by more than 200 units, and the developer agreed to keep the canyons open for wildlife corridors, to limit heights, and to follow architectural controls to minimize scenic impacts of new construction.

Support for protection from new development often is found among homeowner groups who want to preserve the low density character of their neighborhoods. Although these groups are not primarily concerned about protecting the park, their interests often coincide with objectives for protecting natural resources and scenic values. In this case, the park's participation in the planning process requires special caution to avoid being drawn into other community development issues not related to purposes of the park. Some neighbors may vocally oppose any new development and create a polarized situation; in such an instance, the park may need to work with the developers and seek a compromise that will result in reasonable uses of the land in question.

Mining on adjacent lands also is an issue at Saguaro. In one case the Bureau of Land Management approved a plan of operations for a gold mine near the monument. Operations involving cyanide leaching and substantial demands for water can have significant impacts on natural and wildlife resources. The park only learned about the approval when the work started because the Bureau of Land Management took the position that projects involving less than 5 acres did not require a major public review process.

NPS involvement in this mining operation might have ended when the bureau approved the plan of operations. However, when access to the mine across private land was blocked, the operators began using land within the monument for access. The superintendent closed this route and the mine operators filed suit to keep it open. A settlement was reached allowing the Park Service to close the access to the mine, but giving the operators some time to secure an alternate route outside the monument.

This case has helped BLM staff to recognize the need for better communication and encouraged them to consider impacts of even relatively "small" projects on the monument.

Cuyahoga Valley National Recreation Area is located between the growing metropolitan areas of Akron and Cleveland, Ohio. The national recreation area is neighbor to more than 11 different jurisdictions. In 1975, the Cuyahoga Valley Communities Council was established to coordinate planning and information for the many towns bordering the park. While local officials are primarily concerned about the impact of the park on their transportation systems, the council plays an important role in addressing impacts of adjacent development on park resources.

In 1980 the council prepared a set of land development guidelines for the member communities. These guidelines allowed for reasonable economic development while preserving the character of the area. More recently, the park has actively participated in the council's entranceways project, an initiative to establish standards for development around the major park entrances, recognizing the park and community interest in controlling height, density, signs, and site plans. Through this project, the council adopted several goals (including advice to local governments) in "helping to maintain an open natural landscape within the NRA and compatible uses along its boundaries." The council also conducted a review of zoning regulations for setbacks, heights, lot sizes, parking standards, drive-in restaurants, billboards, and oil or gas development.

The council's recommendations are not binding on the members. Nevertheless, the outlook for substantial progress is encouraging. Continued park staff participation in reviewing applications for permits to build will help mitigate the impacts of new development that will inevitably occur to accommodate visitors and community growth.

Ross Lake National Recreation Area was established in part to promote public enjoyment of impoundments created by a major dam and hydroelectric project that serves the city of Seattle's power needs. Proposals have been made to raise the level of the dam and dramatically increase the size of the impoundments, with the potential for significant impacts on the surrounding watershed, including portions of North Cascades National Park. An international treaty with Canada states that no action will be taken on this proposal for at least 80 years. This treaty also established the Skagit Environmental Commission to mitigate impacts of the existing project.

The Skagit Environmental Commission administers an endowment fund that is supported from Seattle City Light Company contributions. The funds can be used to support many different types of natural resource protection programs of interest to the entire North Cascades National Park Complex. This fund supported constructing a parking area and access for the handicapped and restoring campsites at Ross Lake. Studies of fishery resources and other aspects of the entire watershed also have been supported by the commission. Although the power projects have a dramatic impact on the natural environment, the endowment fund for mitigation has been useful in protecting fish, wildlife, and other natural values in the watershed.

Subdivision in Santa Monica Mountains National Recreation Area.

Santa Monica Mountains National Recreation Area is a patchwork of federal, state, local, and private lands near Los Angeles, California, that includes scenic, recreational, natural, and archeological resources. The 1978 act establishing the national recreation area recognized the national interest in protecting these resources, but also recognized that the state of California and local units of government have authority to prevent or minimize adverse uses of the mountains and adjacent coastline. Rather than relying exclusively on federal land acquisition, the act envisioned a cooperative effort among the National Park Service and the state, counties, and private sector to protect the area.

The park has an assistant superintendent for land use coordination with responsibilities for working with the many different jurisdictions on a wide range of planning and development issues. One of the major problems confronting plans for recreational use is how to ensure continuity of public access as new subdivisions are approved.

By participating in the local development review process, the park has been successful in securing significant concessions from developers. For example, in one case, the city of Los Angeles required the developer to construct a trail as a condition of a subdivision approval. Further planning indicated that the best location for the trail was on city land. Negotiations in the review process resulted in the developer setting aside $50,000 to support constructing the trail that will eventually be transferred to the Park Service. In another case, the park is seeking donation of an entrance road from the developer of a major subdivision in Ventura County. The county has supported the proposal for the developer to construct and donate a short spur providing access to a major recreational site managed by the Park Service and the state. This proposal will serve as partial mitigation for the impact of a project that will include more than 3,000 residential units.

The park is continuing to be successful in minimizing impacts of new development by participating in more detailed site planning. For example, a golf course within the NRA boundary was not proposed for acquisition, and a part of this property has started through the subdivision review process. In reviewing the proposal, the Park Service recommended specific plant materials for screening, dedication of some land for pubic use, and modifications in the proposed methods for sewage treatment.

Ventura County has agreed to withhold permit approvals for up to one year for any land that the Park Service intends to purchase. The county notifies the Park Service of pending applications, but funding constraints to date have limited NPS ability to take advantage of this arrangement. The Santa Monica Mountains Restoration Trust helps protect some important tracts until funds are available for NPS acquisition. This nonprofit group receives grants from the California Coastal Conservancy and often has flexibility to make transactions that would not be possible for the Park Service. The trust has been especially helpful in assembling small lot subdivisions into larger parcels and working with the transferable development credit program established by the state and county governments.

As of the end of 1986, a strict system of local and state regulations governing development in the coastal zone around the recreation area appears to be weakening. Nevertheless, the park staff continues to work with dozens of local agencies and authorities to ensure that any negative impacts of new development are reduced as much as possible.

Shenandoah National Park in Virginia is subject to air pollution from many different sources. These sources include major industrial areas of the Midwest such as Chicago, Gary, and Cleveland; the Tennessee Valley region to the south; and in some meteorological conditions New York, New Jersey, and Pennsylvania. Local sources include the metropolitan area of Washington, D.C., and industrial sites in the immediate area of the park. During the past decade the park has sponsored and encouraged research from several local universities and other organizations to determine the impact of air pollution on park resources. A growing body of evidence is being accumulated on the effects of acid rain and fog on vegetation and stream quality, ozone damage to trees and plants, and diminished visibility in important scenic views.

The former superintendent took a strong personal interest in air quality issues, focusing on the affirmative responsibilities of the federal land manager as outlined in the Clean Air Act. The act effectively gives a park superintendent a direct mandate to protect air quality related values (including visibility) of lands within a class I area and to consider whether a proposed emitting facility would have an adverse impact on such values.

The Virginia State Air Pollution Control Board is the agency responsible for issuing permits to regulate constructing major new air pollution sources in the immediate vicinity of the park. At first, this state agency saw the National Park Service as an adversary that was intruding on its area of expertise. Without being confrontational, the superintendent worked with the board over a period of several years and achieved recognition for the Park Service's legitimate role in the permit review process. During the past eight years the park has been involved in more than 40 permit cases involving new projects or changes in existing facilities, including factories, resource recovery facilities (incinerators), power plants, and quarries. In the beginning, the board often paid relatively little attention to NPS comments, but now the Park Service is seen as an ally.

In 1978 the Adolph Coors Company proposed building one of the world's largest breweries within a mile of the park boundary. The NPS Air Quality Division in Denver, Colorado, prepared a detailed analysis of the Coors permit application and found that it did not propose using the best available technology to control emissions as required for new sources under the Clean Air Act. The project had a substantial base of support from local residents and politicians who wanted more jobs for the area. Nevertheless, as a result of NPS participation in the permit process, the brewery proposal was reduced in size and modified to include better emission control technology. These changes are expected to reduce the emissions by about 50 percent, and a baseline was established that will effectively prohibit any additional sulfur dioxide emitting facilities in that vicinity. Coors has started constructing a packaging and distributing facility and has deferred action on the brewery proposal. If the brewery is constructed, it appears that the diligent efforts of the park and the Air Quality Division will have succeeded in substantially reducing the adverse impacts on natural resources.

Rocky Mount on a clear day and with air pollution, Shenandoah National Park.

Work with the Virginia State Air Pollution Control Board is continuing to address additional new sources including resource recovery facilities that have been proposed within 4 miles of the park boundary. Participating in these permit reviews requires time, patience, technical expertise, and sensitivity to local political interests. Nevertheless, the result can be substantial reductions in damage to the park resources and the amount of air pollution that limits the vistas enjoyed by park visitors.

Ten Thousand Islands, Everglades.

Everglades National Park in Florida depends on a complex hydrological system that has been extensively modified in the past decades. Levees and canals outside the park boundary have disrupted natural patterns of water flow that are necessary to maintain healthy populations of fish and wildlife. To address these problems, the park has been working with the Corps of Engineers, the South Florida Water Management District, and other state agencies to restore natural conditions. These efforts include filling canals, removing levees, monitoring water quality, and changing the schedule for releases of water from storage areas.

In the east Everglades area, cooperative efforts included an EPA-supported regional water quality study. In response to the findings of this study, Dade County rezoned the east Everglades area to limit residential development and establish a transferable development rights program to help retain as much sensitive land as possible in a natural condition. The park has been assisting the county in conducting overflights to check for illegal filling of wetlands.

The county also has adopted an ordinance prohibiting the planting of exotic plant species. Working under a memorandum of agreement, the Park Service has helped the county conduct inventories of vegetation and treat certain areas to eradicate exotics so that natural areas "saved" from development are not lost to nonnative plants.

Although regulatory approaches have been helpful, the state has made an even more important commitment to land acquisition. The state has bought more than 50,000 acres adjacent to the park in the east Everglades area for a cost of more than $17 million. This major purchase was accomplished with help from the Trust for Public Land. The South Florida Water Management District also has purchased thousands of acres in this area to help restore natural conditions.

To the north of the park, Golden Gate Estates is a residential subdivision that covers more than 100,000 acres. This project includes more than 183 miles of canals and 813 miles of roads, although only a relatively small portion of the lots have actually been developed. The canal system has dramatic impacts on the complex hydrological system that supports life in the park as water levels and seasonal flooding patterns change. The Florida Department of Natural Resources is developing plans for acquiring some of these lands to implement a restoration program that has been developed with the South Florida Water Management District.

The park has many allies in its efforts to address the external conditions that are critical to protecting wildlife and water systems. The Everglades Coalition was established in 1984 and includes a variety of national conservation organizations. While the park has played an active role in efforts to protect the greater Everglades ecosystem, leadership and political momentum have come from the governor and other state or local officials. These officials probably have a sincere interest in the park, but they also may support these efforts because protecting the park protects the water supplies of growing metropolitan areas in south Florida.

Mammoth Cave National Park.

Mammoth Cave National Park in Kentucky was established to protect the longest cave system in the world--a unique natural feature that was recently designated a world heritage site. In the 1970s studies of the cave ecosystem revealed that the park included only a small portion of a watershed covering more than 100,000 acres that drained into the caves. Sewage and toxic wastes from several communities with inadequate treatment facilities were suspected of filtering into the caves. The impacts of this pollution on sensitive biological resources were not always subtle. One cave in the area had to be closed to the public due to extremely offensive odors.

The park is recognized as a major contributor to the local economy, and the communities are concerned about protecting their primary visitor attraction. Evidence of pollution in the park also raised local concerns about the quality of the drinking water supply, so a strong mutual interest is present in solving the problem.

Using data supplied by the park, the Environmental Protection Agency prepared a regional wastewater treatment plan for the area and proposed to develop an improved treatment system. The National Park Service joined with communities to form a regional sanitation authority and sought funding to provide adequate treatment for waste from another

community that could not afford to join the regional system.

For more than 10 years the park has been seeking a regional solution to the water quality problem. Starting with scientific studies to document the sources and scope of the problem, the park then took their case to the appropriate federal, state, and local officials. The superintendent and the regional director were not hesitant to approach the state legislature and Congress in seeking the necessary authority and funding to address impacts on the park from sources far beyond its boundary.

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Since 1978 Warren has been working on federal land acquisition and protection policy issues. He developed the National Park Service's instructions for land protection planning, and is responsible for reviewing plans for each park that contains non-federal land. Warren is currently the Washington Office coordinator for general management plans in the Southeast and Southwest regions, land protection plans, and several special studies of potential new parks or boundary adjustments in existing parks.

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